Bifurcations in a model of electrochemical reactions in fuel cells

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The bifurcations in a three(or two)-variable ODE model describing the oxygen reduction reaction on platinum surface is studied. The investigation is motivated by the fact that this reaction plays an important role in fuel cells. The mechanism of this reaction has been known for years, however, the detailed study of the mathematical model has not been carried out. We point out that bistability occurs in the system, i.e. for certain values of the parameters two stable equilibria coexist that was not known before and is significant also from the chemical point of view.

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[2] G. Csörgő, P. L. Simon, *Computers and Mathematics with Applications* **2012**, (to appear).